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Telecommunications : the demise  
of natural monopoly ...



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## Background Paper

BP-253E

# TELECOMMUNICATIONS: THE DEMISE OF NATURAL MONOPOLY AND ITS IMPLICATIONS FOR REGULATION

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April 1991



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Cat. No.

ISBN

YM32-2/253E  
0-660-14103-5



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TELECOMMUNICATIONS: THE DEMISE OF NATURAL MONOPOLY  
AND ITS IMPLICATIONS FOR REGULATION

INTRODUCTION

The telephone communications industry has long been regarded as one in which there is a natural monopoly; that is, given the size of the market, long-run average costs are minimized at a scale that allows only one firm to exist. The large capital stock and capacity required to provide service means that multiple providers would result in wasteful capacity duplication. Regulators have, therefore, tolerated a monopoly in exchange for stringent regulations on pricing and services.

New technology is making this view obsolete. Many economies can now accommodate more than one provider of telephone services. This is clearly true of the long-distance market but it is becoming increasingly true of the local market as well. Thus there are now pressures in many markets to deregulate and allow competitive forces to work. Although the greatest move to deregulation and competition has taken place in the United States, it is also evident in the United Kingdom, Japan and Canada.<sup>(1)</sup>

While natural monopoly may have been an important rationale for original regulation, regulators have used the opportunity to achieve other goals as well. In particular, they have been able to structure

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(1) Essentially free entry characterizes the long-distance market in the United States. Two suppliers exist in the United Kingdom while entry has also been liberalized in Japan. In Canada and the United States, there is now free competition for the provision of telecommunications equipment. There are also attempts to expand significantly the limited amount of competition in the market for long-distance services. See, for example: M. Urlocker, "Bell Takes Aim at Unitel," *The Financial Post*, 16-18 March 1991, p. 1; and D. Lacasse, "Challenging Ma Bell," *The Ottawa Citizen*, 9 April 1991, p. C1 and C10.

telephone pricing in such a way as to subsidize the majority of users by penalizing a minority. Enhanced competition could, therefore, have significant implications for consumers.

The effects of American deregulation are spilling over into other economies. A modern economy relies heavily on information transmission. Canadian companies are finding themselves at a competitive disadvantage vis-à-vis their American competitors, who have access to lower telephone rates.<sup>(2)</sup> Since artificially high telephone costs are as damaging as artificially high labour or capital costs, Canadian firms are seeking ways to avoid or offset this disadvantage.

This paper examines the demise of natural monopoly in telecommunications, its actual effect in the United States and its potential effect in Canada.

#### THE AMERICAN MARKET AFTER DEREGULATION

The American telephone system is today more competitive than its Canadian counterpart. The process of eroding the AT&T monopoly in the United States began in the 1960s, but it truly came to fruition in the early 1980s. At that time, AT&T was forced to divest itself of its 22 operating companies, which were then re-organized into seven independent, regionally-based local monopolies and the long-distance market was further opened up to competition and deregulation. AT&T now exists as one of several long-distance carriers, while local services are provided by a number of independent Bell Operating Companies (BOCs), which are restricted in the amount of long-distance services they may supply. The telephone

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(2) In a 1984 appearance before the Canadian Radio-Television and Telecommunications Commission (CRTC), a representative of the Canadian Telebook Agency described how high long-distance rates in Canada put Canadian book wholesalers at a competitive disadvantage with their American counterparts, even though this industry is not a particularly intensive user of telephone services. See: P.S. Grant, "Comments on Janisch," in: W.T. Stanbury, ed., *Telecommunications Policy and Regulation: The Impact of Competition and Technological Change*, The Institute for Research on Public Policy, Montreal, 1986, p. 411-412.

equipment industry is also now unregulated, with free entry. Indeed, this free entry into the American equipment market has been of substantial benefit to Canadian manufacturers.

The American telecommunications sector, prior to divestiture and deregulation, could have been described as a regulatory cartel.<sup>(3)</sup> In that environment, AT&T received guaranteed rates of return and freedom from competition and antitrust laws, while regulators were able to subsidize the majority of telephone customers by penalizing a small group of users who were intensive consumers of particular telecommunications services, notably long-distance services. Ten per cent of American residences account for 50% of inter-state calls. Ten per cent of business locations account for 75% of inter-state messages. And 1% of business accounts for 40% of business inter-state message revenues. The subsidy clearly goes from the minority to the majority.

This situation is even more evident when looking at international calls, for which AT&T in the United States earns very handsome returns, with the excess profit being used to subsidize domestic users. Such returns have generally remained high because regulators have realized that the benefits of reform would accrue to a relatively small group of Americans, but also because some of those benefits would accrue to foreigners.<sup>(4)</sup> Although some analysts would dispute such a conclusion, the conventional wisdom is that the aims of telephone regulation have clearly included income redistribution. On the surface, this redistribution was successful. One need only refer to the concerns of residential consumers about the effect of rate rebalancing on their telephone bills. But if we examine the situation more deeply, it is not at all clear that average citizens were better off under the old régime of regulated monopoly.

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(3) J.T. Wenders, "Deregulating Telecommunications," in: R.E. Meines and B. Yandle, eds., *Regulation and the Reagan Era*, The Independent Institute, San Francisco, Ca., 1989, p. 104-131.

(4) L.L. Johnson, *Competition, Pricing, and Regulatory Policy in the International Telephone Industry*, R-3790-NSF/MF, The Rand Corporation, Santa Monica, Ca., July 1989, p. 18-20.

That régime was viewed favourably by many because it redistributed income from business to residences. There are several reasons why such a redistribution may not have been effective in benefiting poorer households. First of all, the redistribution, to the extent that it actually took place, was not well targeted and redistributed income to rich and middle income households as well as poor ones.

Second, any increased costs borne by business are passed on to shareholders, labour or consumers. Those whom the system was intended to benefit may instead have faced lower wages, reduced job opportunities or higher prices in the non-telephone market. Thus the direct subsidy may well have been offset by indirect additional costs elsewhere.

More importantly though, the system of pricing caused the economy to suffer an efficiency penalty which regulators, politicians and consumer advocates have tended to ignore because of its intangible nature and the difficulty in measuring it. It is well known, however, that distorting prices, both upwards and downwards, causes users to misallocate resources and therefore to produce less than they otherwise would. Under-priced services are overused while over-priced services are underused.

A study of these efficiency losses for the United States concluded that about US\$10,700 million was lost in 1983 as a result of over-priced long-distance tolls and US\$700 million was lost as a result of under-priced and inappropriately priced local services.<sup>(5)</sup> This large discrepancy between the two sources of efficiency loss was due to the much more elastic<sup>(6)</sup> demand for toll services, which caused a significant

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(5) J.T. Wenders and B.L. Egan, "The Implications of Economic Efficiency for U.S. Telecommunications Policy," *Telecommunications Policy*, March 1986, p. 33-40.

(6) The price elasticity of demand measures the change in quantity demanded in response to a 1% increase in price. If demand is inelastic, a 1% price increase will result in less than a 1% decline in the quantity demanded, and an overall increase in total revenues. If demand is elastic, a 1% increase in price results in a more than proportionate decrease in quantity demanded, so that total revenues fall. An elasticity of, for example, -0.50 indicates that a 1% increase in price will result in a 0.50% decrease in quantity demanded.

reduction in the quantity of services demanded. The demand for local services on the other hand is far less elastic, resulting in less change in quantity demanded.

The provision of free local directory assistance was estimated to have resulted in efficiency losses of US\$500 million while an optimal Local Measured Service (LMS) régime could produce efficiency gains of US\$400 million to \$800 million.<sup>(7)</sup> It has been estimated that such costs would be as high as \$2,000 million in Canada because of the proportionately greater use of cross subsidization in this country.<sup>(8)</sup>

Despite all that has happened in the United States market, unrestricted competition has not yet been achieved. Long-distance rates are still set by regulatory authorities on the basis of AT&T's dominant position; that company still controls about 75% of the American long-distance market, down from over 90% in the early 1980s. Regulation at the state level has not changed much since the 1984 divestiture of AT&T.<sup>(9)</sup>

With continued regulation, the system of cross-subsidization, whereby overpriced long-distance rates enable local telephone service to be underpriced, continues, albeit in a different form. Part of the reason for this is the way in which phone rates are regulated. State agencies regulate intra-state rates which, in real terms, were the same in 1986 as they were in 1982, although there was a decline from 1984 to 1986. On the other hand, inter-state tolls subject to federal regulation declined by about 8% per year in real terms. Local rates were increasing by about 5% per year in real terms, a process which began before deregulation and which would have been higher had cross-subsidization been fully eliminated. This pattern of regulatory response is not irrelevant since

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(7) J.M. Griffin and T.H. Mayor, "The Welfare Gain from Efficient Pricing of Local Telephone Services," *Journal of Law & Economics*, Vol. XXX(2), October 1987, p. 465-487.

(8) S. Globerman, "Economic Factors in Telecommunications Policy and Regulation," in: W.T. Stanbury, ed., *Telecommunications Policy and Regulation: The Impact of Competition and Technological Change*, The Institute for Research on Public Policy, Montreal, 1986, p. 41.

(9) R.W. Crandall, "Surprises from Telephone Deregulation and the AT&T Divestiture," *American Economic Review*, Vol. 78, No. 2, May 1988, p. 323-327.

about one-half of the efficiency loss was estimated to have been due to the overpricing of intra-state tolls.

Despite these price changes, the American evidence suggests little in the way of reduced telephone penetration because of the highly inelastic demand for basic service. The most often cited estimates are -0.02 for residential connections, -0.10 for residential access, and -0.17 for local use.<sup>(10)</sup> From 1983 to 1986, telephone penetration increased by one percentage point to 92.4%, a figure which is lower than the comparable Canadian penetration rate. Penetration rates rose even for the lowest income households.<sup>(11)</sup>

The pressure to increase local rates comes from several sources. With competition in long-distance traffic, the source of any subsidy is being eroded. In addition, though, technological developments are enabling long-distance carriers to bypass local carriers. If such bypass can be achieved, local operating companies are denied high access fees and their inherent subsidies. These subsidies are not trivial. According to AT&T, the average access cost in 1981 was \$26 per month, yet residential consumers paid only an average of \$10 per month. Of the \$16 subsidy, \$7 came from excessive charges on inter-state tolls and \$9 from excessive charges on intra-state tolls.<sup>(12)</sup> This ratio of access cost to actual price would seem to be similar to that for Canada. To earn one dollar of local revenue in Canada required a phone company expenditure of \$1.48 in 1976, \$2.23 in 1983 and, it was believed, \$2.50 in 1985.<sup>(13)</sup> Nor is bypass just a theoretical prospect. Several large American corporations and governments are linking their offices through private communications

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(10) A.E. Kahn and W.B. Shew, "Current Issues in Telecommunications Regulation: Pricing," *Yale Journal on Regulation*, Vol. 4, 1987, p. 210.

(11) Crandall (1988), p. 324.

(12) L.L. Johnson, "Why Local Rates are Rising," *Regulation*, July/August 1983, p. 35.

(13) W.K. McCourt, "Local Service Pricing: Current Environment and Future Trends," in: R.J. Schultz and P. Barnes, eds., *Local Telephone Pricing: Is There a Better Way?* Centre For the Study of Regulated Industries, McGill University, Montreal, 1984, p. 13.

lines and are earning above-average rates of return on these investments. (14)

While AT&T has clearly retained its dominant position in the American long-distance market, that position has been greatly eroded over time by its competitors. AT&T experienced a positive growth rate of 7.5% per year from 1984 to 1987, while the industry rate was 12.9% per annum and the growth rate of competitors was 35.8%. Table 1 shows the declining market share of the industry leader. The impact of competition is also evident in the fact that AT&T is not able to earn the rate of return permitted under regulation. The FCC has authorized a rate of return of 12.2% per annum yet actual returns for AT&T were 11.8% in 1985, 11.3% in 1986, and 11.2% in 1987. (15)

Of the 161 Local Access and Transport Areas (LATAs) in the United States, 40% are serviced by four or more long-distance carriers, 75% are serviced by at least three long-distance carriers, and only 11% are serviced by AT&T alone. The three largest suppliers of long-distance service in the United States are AT&T, Sprint and MCI, each of which has built or is building a national transmission system. In addition, numerous small suppliers have found particular niches which they can profitably serve, buying capacity wholesale and repackaging it for retail sale.

It is clear, then, that market conditions are introducing competition and eroding monopolies at both the local and long-distance levels.

#### **QUALITY OF SERVICE UNDER COMPETITION**

Long-distance carriers who do not currently enjoy equal access receive a discount equal to 55% of AT&T's interconnection costs. Thus their costs and prices tend to be lower than those of AT&T, compensating for the lower quality of their service.

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(14) See, for example: H.N. Janisch, "Winners and Losers: The Challenges Facing Telecommunications Regulation," in: W.T. Stanbury, ed. (1986), p. 331-332; and P. Coy, "The Baby Bells Learn a Nasty New Word: Competition," *Business Week*, 25 March 1991, p. 96-101.

(15) L.L. Johnson (July 1989), p. 19.

Table 1

AT&T Share of Interstate Market  
(measured as a percentage of switched access minutes)

	<u>Premium Minutes</u>	<u>All Minutes</u>
1984 Third Quarter	98.7%	84.2%
1985 Fourth Quarter	87.9%	77.0%
1986 Fourth Quarter	78.8%	74.0%
1987 Second Quarter	78.1%	73.7%

Note: A switched access minute represents one minute of long-distance calls using the distribution network of a local telephone company. A premium minute represents a minute of long-distance calls in which a competitor of AT&T has equal access to the local operating company where this equal access refers to "1 +" dialing, similar to the long-distance dialing system in Canada.

Source: P.L. Wynns, *AT&T's Share of the Interstate Switched Market*, Federal Communications Commission, Washington, D.C., 21 October 1987.

One major concern about increased competition has been that quality would suffer as competitors attempted to compete on the basis of lower prices. But consumers do weigh one service against the other and will not accept quality declines not commensurate with price declines. Moreover, a number of competitors compete specifically on the quality that they can offer.

After the breakup of AT&T, there were numerous reports that the telephone system in the United States had become chaotic. While such transitional problems can be expected with the breakup of a US\$150,000 million giant, this view of the American industry is "...misleading and inaccurate."<sup>(16)</sup> Indeed, the process of divestiture and increased competition did much to heighten the level of service.

The notion of significantly deteriorated quality is based mostly on anecdotal evidence and survey data, both of which can be unreliable. For example, surveys of residential users have shown that they continually significantly overestimated the cost of long-distance calls.<sup>(17)</sup> In the small business community, respondents to a variety of polls also cited high telephone costs as more of a problem than quality of service, even though these costs have, on average, been declining.

Generally accepted measures indicate that service in the United States has not eroded as a result of competition, either at the local level or in the long-distance market. Quality concerns relate to billing accuracy, reliability and, where data transmission is involved, a minimum of noise, distortion and errors.

Just after the AT&T divestiture, the magazine *Consumer Reports* found that many customers complained about the inconvenience of using long-distance carriers that did not enjoy equal access. Poor voice quality, intermittent operator service, blackout hours during which residential users could not use the service, and incorrect billings were

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(16) H.N. Janisch, "Winners and Losers: The Challenges Facing Telecommunications Regulation," in: W.T. Stanbury, ed. (1986), p. 361.

(17) B. Thomas, "A Profile of the U.S. Experience with Competition in Public Long-Distance Telephone Service," Consulting Report 1, *Federal-Provincial-Territorial Task Force on Telecommunications*, December 1988, p. 195-197.

also common complaints. *Consumer Reports* is no longer surveying these aspects of telephone services.<sup>(18)</sup> Problems that arose when competitive long-distance services were introduced now seem to have been ironed out, partly as a result of learning by doing but also as a result of a very large-scale investment in plant and equipment. For example, capital expenditures by MCI, a competitor of AT&T, were 30%, 40% and 60% of revenues for the years 1984 to 1986 inclusive.<sup>(19)</sup>

One area where some consumer dissatisfaction is still being expressed is "Alternative Operator Services." Companies pay a fee to hotels, motels and other transient locations to provide telephone services and typically charge customers prices in excess of those charged by AT&T. The FCC has received numerous complaints about service and pricing of these companies and has ruled that their practices of blocking access to other carriers has been unfair and unjust.<sup>(20)</sup>

#### TELEPHONE PRICE TRENDS IN THE UNITED STATES AND CANADA

Charts 1 and 2 document the trends in American and Canadian "real telephone prices." Real prices are calculated as the nominal prices deflated by the appropriate all-item Consumer Price Index (CPI).<sup>(21)</sup>

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(18) L.L. Selwyn and D.N. Townsend, "A Study of Selected Impacts of Competition in the U.S. Long Distance Telephone Industry," Consulting Report 2, *Federal-Provincial-Territorial Task Force on Telecommunications*, December 1988, p. 67-70.

(19) B. Thomas (1988), p. 92.

(20) Statement of D. Wagenhauser before United States House of Representatives Subcommittee on Telecommunications and Finance, *Telephone Operator Services*, One Hundred First Congress, First Session, 5 April 1989.

(21) If the real price of a commodity is increasing over time, its nominal price is increasing at a rate faster than the CPI in general. If the real price is declining, then the nominal price is increasing less rapidly than the CPI in general. Dramatic real price declines are associated with a declining nominal price.

CHART 1  
AMERICAN REAL TELEPHONE PRICES  
JANUARY 1984 = 100

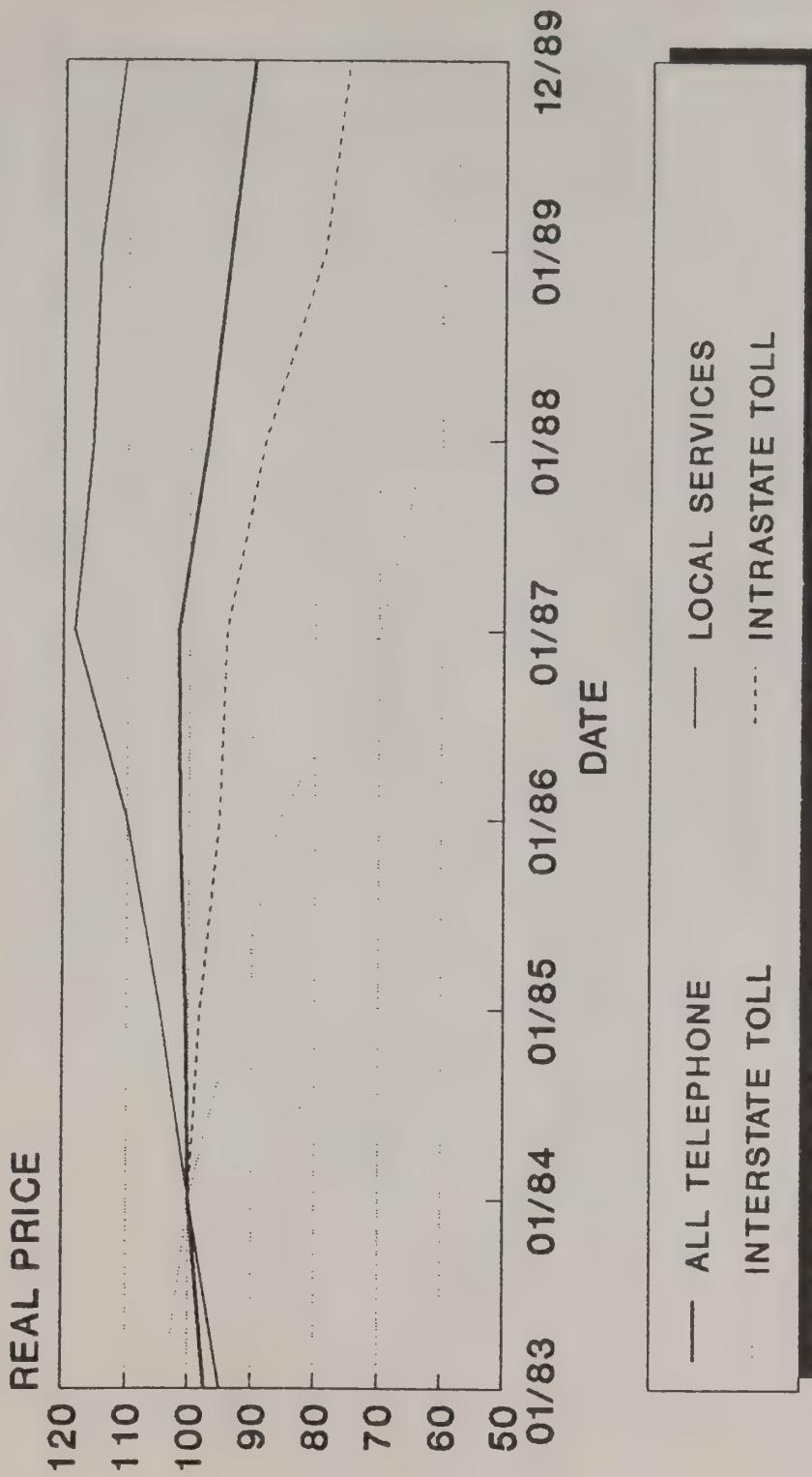
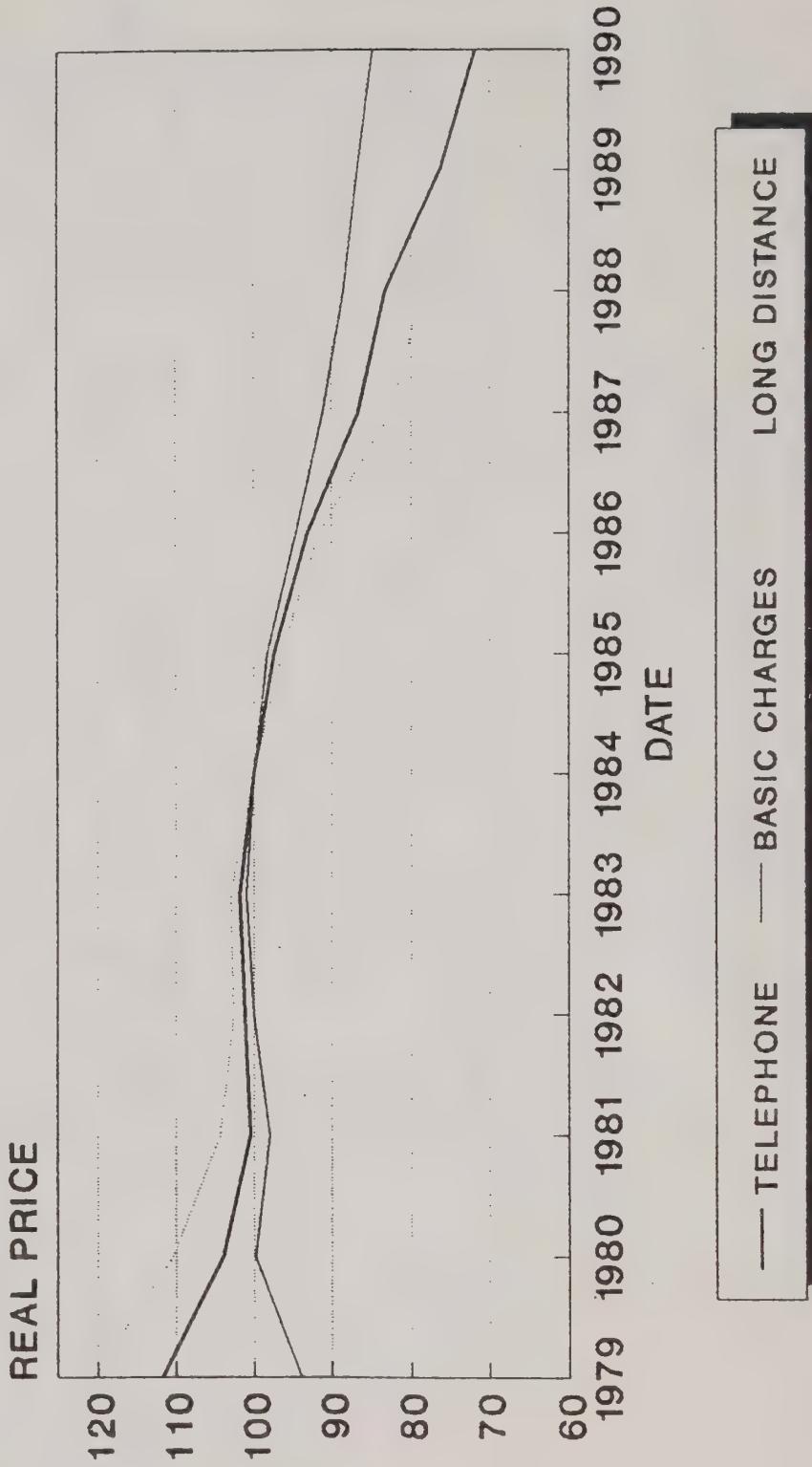


CHART 2  
CANADIAN REAL TELEPHONE PRICES  
1984 = 100



Changes in American real telephone prices are presented in Chart 1, covering the period January 1983 to December 1989. Several trends are apparent from this chart. Local service costs rose significantly from 1984 to 1987, almost 20% in real terms. This trend has been reversed and local services now are only 10% more expensive in real terms than in 1984. The impact of rate rebalancing on local prices in the United States has not been nearly as great as was originally thought to be the case.

American long-distance costs have declined dramatically. Interstate tolls have decreased by over 40% in real terms since 1984 while intrastate tolls have declined by over 20%. The difference in these two types of long-distance prices is largely due to regulation. Intrastate charges are regulated by state authorities, which have shown a far greater propensity than their federal counterpart, the Federal Communications Commission (FCC), to continue subsidizing local service via artificially high toll charges.

The decline in long-distance charges has more than offset any increase in local charges so that, by the end of 1989, total telephone prices had declined by 10% in real terms.

Chart 2 presents the trend in real telephone prices in Canada. Trends similar to those in the United States are evident here. Unlike the American experience, even basic charges have declined in real terms since 1984 because rate rebalancing has not really taken effect here. Total telephone prices have declined by about 30%<sup>(22)</sup> in real terms, significantly more than in the United States, and long-distance real prices have fallen by an almost equal amount.

Given all the fanfare touting the effects of American deregulation on reducing telephone prices, these results seem surprising. It should be kept in mind that these statistics are measuring changes in prices, not levels of prices. All the evidence points to the fact that the level of prices in Canada is higher than that in the United States.

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(22) Another measure of Canadian telephone prices is the "Bell Price Index" compiled by Montgomery et al. That index registers a real price drop of 28% from 1984 to 1988. See: W.P. Montgomery, S.C. Lundquist and L.L. Selwyn, *A Study of Rate of Return Regulation and Alternatives*, Economics and Technology Inc., Boston, Mass., 31 March 1989, p. 111.

The following exhibits (Tables 2 and 3 and Chart 3) from the 1988 Sherman Report<sup>(23)</sup> demonstrate clearly that Canadian long-distance rates are higher than their American counterparts. While Canadian rates for very short distances are actually lower than comparable American rates when using AT&T as the benchmark price, American costs are lower for medium to long distances. This is particularly true when Canadian calls extend beyond the Bell Canada calling zone, either across Canada or internationally. In such cases, Canadian prices are more than twice as high as American rates.<sup>(24)</sup>

Long-distance tariffs to Europe also tend to be higher in Canada, as Table 3 shows.

The Canadian financial system is a major user of long-distance voice and data communications. The best technology for these types of transmission is either not available in this country or costs five to seven times as much as similar services supplied to American financial institutions.<sup>(25)</sup> Chart 4, which is reproduced from an article in *Canadian Banker*, demonstrates that Canadian long-distance tolls are substantially higher than American tolls, even though the relative price decline from 1987 to 1989 was greater in Canada.

There are several possible explanations for these seemingly contradictory results. In the first place, because Canadian rates are so much higher than American rates, the discrepancy between price and marginal cost is likely to be higher here, providing more scope for price declines. While economies of scale might lead one to expect lower American costs on average, it is likely that cross-country service, and services in the major urban centres in Canada are also large enough to exploit these economies of scale.

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(23) Report of the Federal-Provincial-Territorial Task Force on Telecommunications, *Competition in Public Long-Distance Telephone Service in Canada*, L.R. (Bud) Sherman, Chairman, Ottawa, 1988.

(24) American rates in these tables and charts are rates charged by AT&T, which are generally higher than those of other long-distance carriers.

(25) P. Hogg and G. Horhota, "Please Hang Up and Try Again," *Canadian Banker*, Vol. 96, No. 4, July-August 1989, p. 27.

Price Comparisons of Directly Dialled Long Distance Calls,  
Bell Canada versus AT&T  
(5-minute daytime call, Cdn. Dollars)

Mileage	I AT&T Inter- state(1)	II AT&T U.S.- Canada(2)	III Bell Canada Int're-Co. (3)	IV Bell Canada Trans- Canada(4)	V Bell Canada Canada- U.S.(5)	VI Bell Canada Canada- U.S.(5)	VII Difference (I-V)/I
5	\$0.94	\$0.83	\$0.85	31%	\$0.70	28%	\$0.65
25	\$1.26	\$1.45	\$1.30	-3%	\$1.30	-3%	\$1.19
75	\$1.37	\$1.87	\$1.90	-39%	\$1.95	-43%	\$1.78
150	\$1.51	\$2.42	\$2.05	-35%	\$2.90	-92%	\$2.30
250	\$1.51	\$2.77	\$2.10	-30%	\$3.50	-131%	\$2.56
500	\$1.64	\$3.45	\$2.20	-34%	\$4.10	-150%	\$3.32
750	\$1.64	\$3.89	\$2.20	-34%	\$4.50	-175%	\$3.58
1000	\$1.71	\$3.93	\$2.20	-29%	\$4.60	-169%	\$3.71
1500	\$1.71	\$4.17	\$2.20	-29%	\$4.60	-169%	\$3.76
2000	\$1.79	\$4.37	\$2.20	-23%	\$4.70	-162%	\$3.77

Notes:

- (1) Effective 1 January 1988; restated in Canadian funds, \$1 U.S. = \$1.25 Cdn.
- (2) Effective 15 April 1988; restated in Canadian funds.
- (3) Effective 1 April 1988, per Schedule 1.
- (4) Effective 1 April 1988. TransCanada = services provided between two or more Canadian telephone companies whose serving areas are not adjacent.
- (5) Effective 1 July 1987. Canada-U.S. = services provided between a Canadian and a U.S. telephone company, excluding those in the non-contiguous states and territories, or between a Canadian telephone company and one operating in Mexico.

SOURCE: Bell Canada and AT&amp;T tariffs.

Table 3

Price Comparisons of Directly Dialled International Calls,  
Teleglobe Canada versus AT&T  
(8-minute daytime call, Cdn. Dollars)

	AT&T*	Teleglobe**	Percentage Higher Than AT&T
United Kingdom	\$11.05	\$11.48	4%
France	\$12.33	\$11.48	7% lower
Germany	\$12.33	\$15.39	20%
Italy	\$12.33	\$16.83	27%
Switzerland	\$12.33	\$15.39	20%
Japan	\$16.83	\$21.25	21%

\* Effective March 1988; restated in Canadian funds, \$1 U.S. = \$1.25 Cdn.

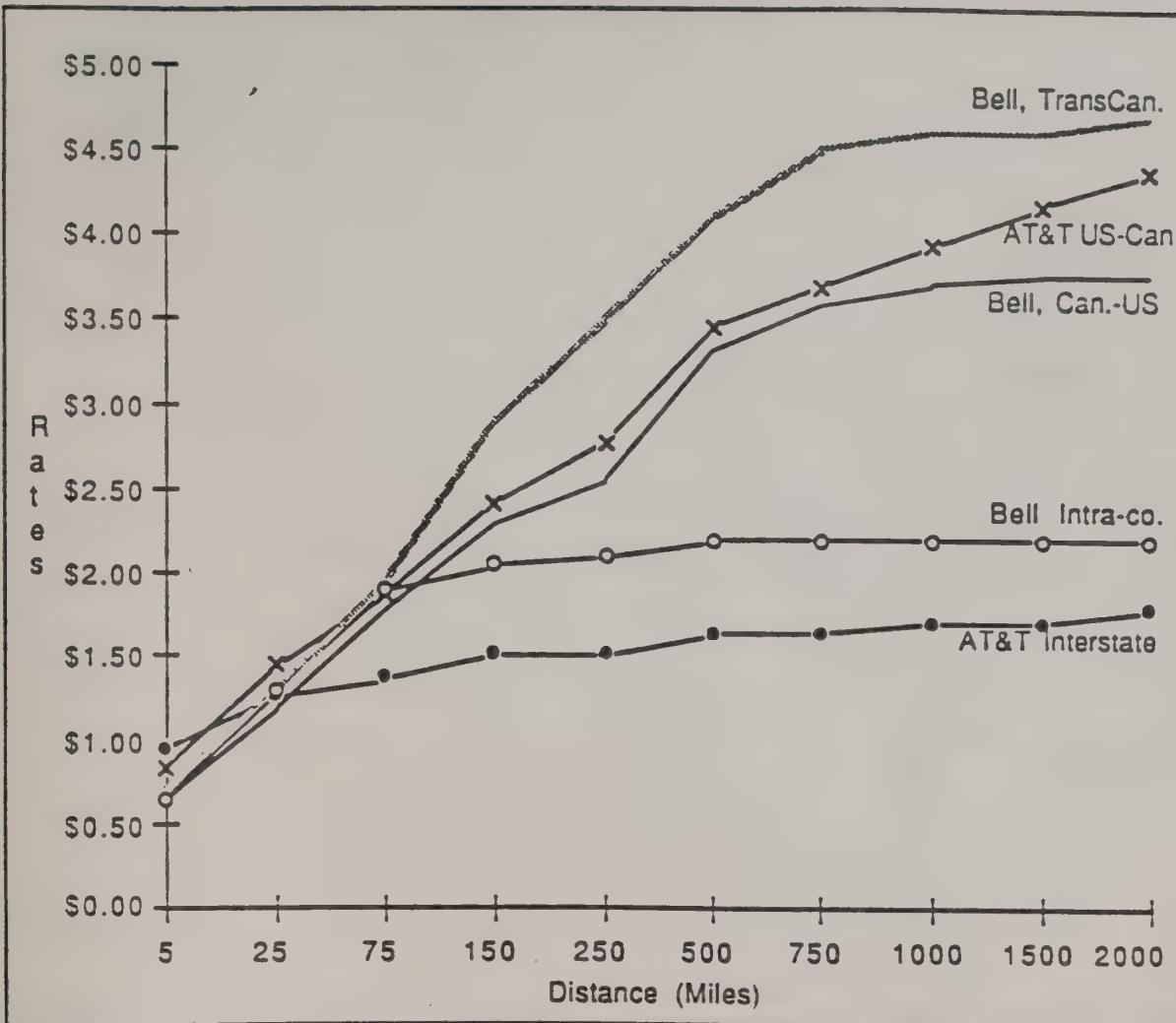
\*\* Rates in effect as of 1 June 1988.

SOURCE: Teleglobe Canada and AT&T tariffs.

From: Report of the Federal-Provincial-Territorial Task Force on Telecommunication (1988) p. 157.

CHART 3

Distance Sensitivity of Current Canadian and U.S.  
Directly Dialled Long Distance Rates \*  
(5-minute daytime call, Cdn. Dollars)



\* Bell Intra-co. and TransCan. rates as at 1 April 1988; Bell Can.-US rates as at 1 July 1988; AT&T interstate rates as at 1 January 1988; AT&T US-Can. rates as at 15 April 1988. AT&T rates are restated in Canadian funds, \$1 U.S. = \$1.25 Cdn.

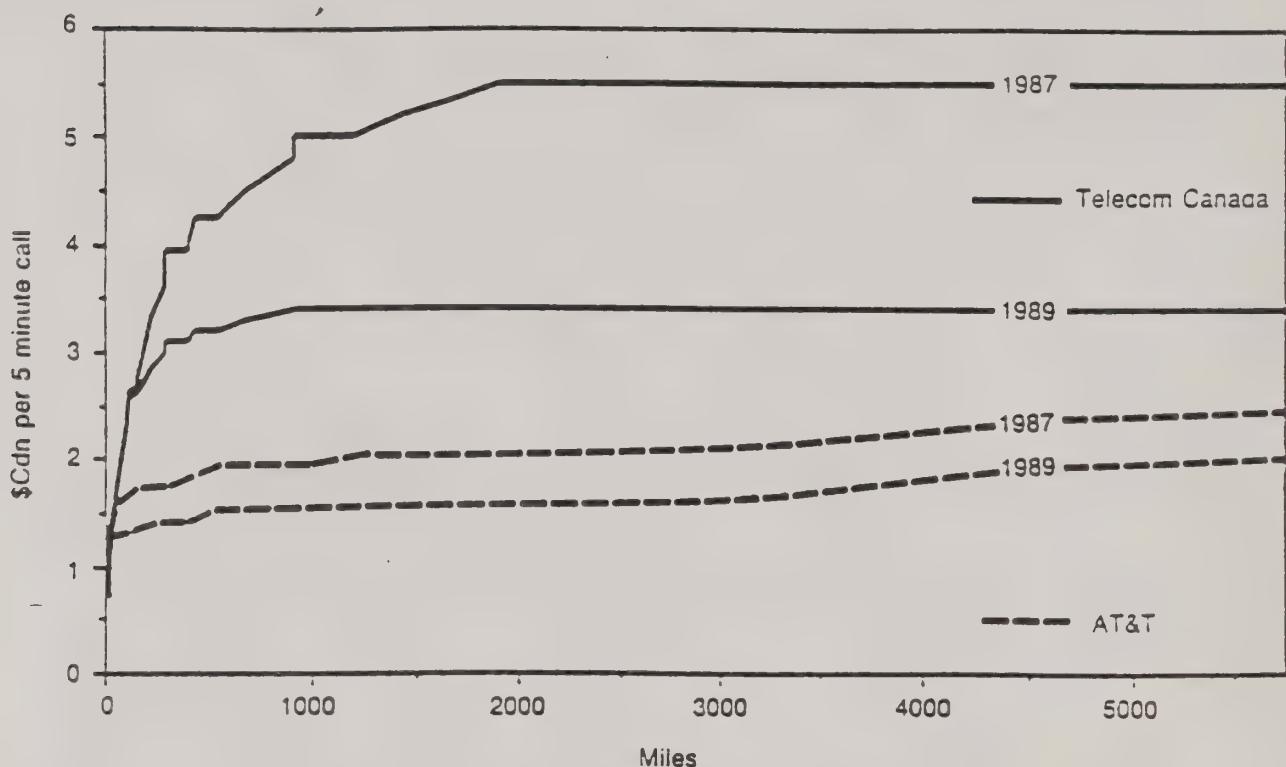
SOURCES: Bell Canada and AT&T tariffs.

From: Report of the Federal-Provincial-Territorial Task Force on Telecommunications, *Competition in Public Long-Distance Telephone Service in Canada*, Ottawa, 1988, p. 125.

Chart 4

TELECOM CANADA versus AT&T RATES, 1987/1989.

The graph shows the cost of a five-minute business-day call at Telecom Canada (Bell) rates as of January 1, 1987 and 1989, compared to AT&T Interstate rates for the same dates, duration, and distance. AT&T charges are converted to Canadian dollars at the applicable current exchange rate.



Source: Hoey Associates. Graph: Angus TeleManagement Group.

From: P. Hogg and G. Horhota, "Please Hang Up and Try Again", Canadian Bankers, Vol. 96, No.4, July-August, 1989, p.27.

Local service charges in Canada have not been increased as a result of rate rebalancing, as has been the case in the United States. Thus that component of the CPI is working to keep prices low in Canada, whereas it has the opposite effect in the United States.

Despite the fact that the industry has not gone through the same experience of deregulation in Canada as it has in the United States, competitive effects are being felt here. The bulk of long-distance revenues are garnered from a small number of large users. With low long-distance tolls in the United States, a strong incentive exists for these large users to develop ways to bypass the Canadian system as much as possible. Such action, or even just the threat of it, would require even monopolists in Canada to offer services at lower prices than would otherwise be the case. Given the nature of the Canadian market and its geographical proximity to the United States, competitive pressures are able to penetrate an industry that is technically a regulated monopoly.

It is illegal for Canadian carriers to route Canada-to-Canada calls through the United States, though in 1985 such routing did take place temporarily between British Columbia and the Toronto-Montreal market until the Canadian regulatory authorities were able to stop it.<sup>(26)</sup> Internationally, such arbitrage is becoming more common; for example, for a time it was less expensive to route a Paris to New York call through London than it was to make the call directly; this eventually forced the French telephone system to lower its rates. There is evidence, however, that Canadian companies are making calls to American destinations by patching into American discount services. And it is technically possible for Canada to Canada calls to be made by using two different Canadian resellers and an American discount service.<sup>(27)</sup>

There is another reason, though, why American telephone rates do not seem to have changed sufficiently in response to deregulation

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(26) W. F. Ayeryt and A.L. Thimm, *The Effects of Telecommunications Deregulation on Canada and Germany: A Case of Regulatory Spillover*, University of Vermont School of Business Administration Faculty Working Paper, no date, p. 11.

(27) S. Globerman and D. Carter, *Telecommunications in Canada: An Analysis of Outlook and Trends*, The Fraser Institute, Vancouver, 1988, p. 122.

and competition. Some of the benefits of competition may be showing up in the form of higher quality, and consumer price indices are notorious for their upward bias in the face of such quality change. In addition, changes to the bundling of services could lead to price measures which are biased upwards. In New York City, for example, the local calling area has been expanded significantly since 1984.(28) Thus, calls that used to be charged at long-distance rates are now financed either through local message services tolls or through the local access charge. CPI surveys would view this change as an increase in local price and typically fail to take into account the fact that the local dialling area has been enlarged and the effective price for a wide-range of calls has now decreased.

Just as important, though, this scenario would work to increase the measured average price of long-distance calls, even though those rates might not change. It is the low price (i.e., short distance) long-distance toll calls which are combined with local services. Thus the average length of a long-distance call, and hence the average price of a long-distance call, will appear to have increased, even though rates have not changed. Therefore, such a change in product bundling could show up as an increase in local and long-distance prices when in fact it is just the opposite.

Long-distance costs have been falling as a result of new technology: fibre optics, satellite communications, etc. Not only have costs fallen, but the cost structure has changed so that, in the United States at least, the market is large enough relative to the cost structure that long-distance telecommunications are no longer a natural monopoly. This competition helped to force AT&T to reduce long-distance tolls, especially now that the local operating companies must give all long-distance carriers equal access.

Rate rebalancing in the United States has taken place, although not nearly as fast as had been expected. From December 1980 to December 1987, residential basic rates increased by 61% in large exchanges and 95% in smaller ones. In the rural states, the average increase was

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(28) T. Monroe, *Telephone Regulation and Competition: A Survey of the States*, U.S. Department of Commerce, National Technical Information Service, Washington, D.C., October 1986, p. 15.

even higher: 80% in the larger exchanges and 113% in the smaller ones.<sup>(29)</sup> Between January 1980 and November 1986, local telephone charges, as measured by the American CPI, rose by 31.6% in real terms while long-distance charges fell by 28.5% in real terms.<sup>(30)</sup>

Rate rebalancing has been proposed for Canada and the CRTC has held hearings on this topic. According to W.T. Stanbury, American Measured Toll service (MTS) rates in 1986 averaged 37% lower than comparable, Canadian rates.<sup>(31)</sup> Professor Stanbury also argued that a reduction in long-distance rates would not necessarily require an offsetting increase in local rates. While Bell Canada argues that the price elasticity of long-distance toll calls is -0.40, Stanbury cites CNCP estimates of an elasticity of -1.30.<sup>(32)</sup> If the latter figure is indeed correct, total revenues will increase with a reduction in price, and given the marginal cost of supplying long-distance calls, this increased revenue should be almost sufficient to offset those costs.<sup>(33)</sup>

The Stanbury argument assumes that long-distance tolls would not fall to such an extent that excess profits in this area were totally eliminated. Thus, a large part of the local subsidy could still be

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(29) R.W. Crandall, "Entry, Divestiture and the Continuation of Economic Regulation in the United States Telecommunications Sector," in: G. Majone, ed., *Deregulation or Re-regulation? Regulatory Reform in Europe and the United States*, Pinter Publishers, London, 1990, p. 65. Note that these price increases are in nominal terms.

(30) A.E. Kahn and W.B. Shew, "Current Issues in Telecommunications Regulation: Pricing," *Yale Journal on Regulation*, 1987, p. 195.

(31) W.T. Stanbury, "Evidence Filed on Behalf of CNCP Telecommunications," CRTC TELECOM PUBLIC NOTICE 87-15, Rate Rebalancing and Revenue Settlement Issues, 21 August 1987.

(32) *Ibid.*, p. 13.

(33) *Ibid.*, p. 12. Stanbury cites evidence that it costs \$0.31 to produce an additional \$1 of long-distance revenue. Thus, a 1% reduction in rates will generate an additional 1.3% in quantity demanded and a 0.3% increase in revenues, costing  $1.3 \times \$0.31$ , or 41 cents. The revenue shortfall as a result of a price decline is thus very minimal.

maintained. Thus, Unitel maintains that it will contribute funds to the Bell system to continue the local telephone subsidy.(34) In this scenario, long-distance tolls, while expected to fall, would still be above marginal cost.

This elasticity estimate cited by Professor Stanbury is higher than the most often cited American estimates. While toll services are clearly more price-sensitive than local services, that demand is still estimated to be inelastic. Average elasticities for toll services are -0.67 for intrastate calls and -0.74 for interstate calls.(35) If these American elasticity estimates are more appropriate, then the revenue shortfall from a reduction in long-distance rates would be greater and more extensive rebalancing would be required. This seems to be consistent with the American experience. It should also be noted that the Bell Canada estimate cited above is significantly lower than the comparable American figures, and lower than recent estimates for Canada cited below. Thus it is likely that Professor Stanbury underestimates the amount of local rate increases required as a result of rate rebalancing, while Bell Canada overestimates it.

Other, Canadian, estimates of long-distance toll elasticities for Message Toll Service (MST) are as follows:

- 0.5 to -0.7 for intra-company MTS;
- 0.55 to -0.85 for inter-company MTS;
- 0.65 to -1.00 for Canada-United States MTS; and
- 0.6 to -1.2 for international MTS. (36)

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(34) P. Chisholm, "Phone Fight," *Maclean's*, 25 March 1991, p. 48-49.

(35) A.E. Kahn and W.B. Shew (1987), p. 210.

(36) Steven Globerman Associates Ltd., "Elasticity of Demand for Long-Distance Telephone Service," Consulting Report 5, prepared for: Federal-Provincial-Territorial Task Force on Telecommunications, *Competition in Public Long-Distance Telephone Service in Canada*, December 1988. Within the context of these figures, inter-company calls are calls made within the region served by one carrier; i.e., Bell Canada, BC Tel, etc.

## REGULATION AND THE PROSPECTS FOR COMPETITION IN CANADA

The process for deregulating the Canadian telephone industry has begun although it is not nearly as far along as deregulation in the United States. Bell Canada and other telephone operators in Canada have traditionally been monopoly suppliers of telephone attachment equipment. In the 1970s, some cracks began to appear in that monopoly. In a 1980 interim decision and its 1982 final decision, the CRTC removed Bell's monopoly on telephone equipment. Customers today pay a basic access charge for telephone service and may rent or buy all of their equipment either from their local telephone company or from other sources. This segment of the market is now competitive and enjoys free entry.

Some moves toward greater competition in telecommunications are also underway. Whether or not telecommunications is a natural monopoly is a question that has been debated extensively before the CRTC. In broad terms, it seems to have been accepted that many telecommunications services are not natural monopolies. The CRTC has now allowed some interconnections to the Bell system for competing providers of long-distance service. CNCP, now Unitel, was granted permission to resell long-distance voice services and to provide long-distance data services. Competition in traditional long-distance service has been refused by the CRTC in the past and has not yet been granted, but hearings on further applications are still underway. (37)

In Canada, there are few of the jurisdictional uncertainties that exist in the United States. Even though regulatory jurisdiction is shared, the lines of demarcation are quite clear. For example, in the United States, the FCC regulates only some of the activities of its client firms, but the CRTC does not share jurisdiction over the companies that it regulates. Thus a policy change by the federal government, implemented via the CRTC, would have more certain results than a similar policy change at the federal level in the United States.

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(37) J.C. Strick, *The Economics of Government Regulation: Theory and Canadian Practice*, Thompson Educational Publishing Inc., Toronto, 1990, p. 162-71.

But American and Canadian regulators treat competition in quite different ways. In the U.S., regulation now assumes free and competitive entry. This is not so in Canada, where regulators try to consider whether entry is efficient and beneficial.(38)

#### COMPETITION, PRICING AND THE PROVISION OF UNIVERSAL SERVICE

Now that Unitel is seeking permission to enter the traditional long-distance market, speculation has arisen about the possible breakup of the Bell Canada system. Some have suggested that the call for divestiture is merely a tool by which Unitel might be able to force concessions out of Bell, while others see it as a logical result of competition.(39)

If competition does come to Canada, with or without divestiture, what can we expect? Several characteristics of a newly competitive market can be predicted, based on economic theory and the American experience.

The most obvious development will be a significant extension of the pressures to eliminate cross-subsidization. While regulators find it very difficult to allocate costs, firms in a competitive environment do not. Any over-priced service will attract entry and any service priced too low will prove to be a profit drain. As long as local access and long-distance messages can be purchased separately, no firm can successfully subsidize one over the other.

Competition is likely to result in further unbundling of telecommunications services, just as competition led to unbundling of financial services. As long as any service can be supplied separately, entry will take place if existing prices are out of line with costs. Telephone companies will have an incentive to provide those services that consumers want, and to charge what consumers are willing to pay.

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(38) W.P. Montgomery, S.C. Lundquist and L.L. Selwyn, "A Study of Rate of Return Regulation and Alternatives," Economics and Technology Inc., Boston, Mass., 31 March 1989, p. 12.

(39) M. Urlocker, "Bell May Get Breakup Call," *The Financial Post*, 23-25 March 1991, p. 1.

It is entirely likely that local measured service (LMS) will become a feature of local services in a world of competition. This would serve several purposes. It would enable consumers who use little in the way of telephone services to buy only what they wanted. Indeed, LMS could reduce the impact of rate rebalancing on poor households.<sup>(40)</sup> It would also enable telephone companies to extract extra payment from those who were intensive users of telephone services at the local level. In addition to LMS, there would probably be a greater reliance on time-of-day pricing at the local level in order to use telephone capacity more efficiently.

Enhanced competition, with its corresponding change in rate structure would likely result in further debate about the universality of telephone services. Universal service is considered desirable because there are believed to be external benefits from a telecommunications system. Those who are hooked up to the system derive greater benefits as the number of persons who can be reached increases. Thus users of a system benefit as the system expands.

This externality, though, no longer represents the primary justification for universal services. Rather, advocates of universality warn of "telecommunications ghettos" in which poor families would not be able to afford telephone services; they argue that the telephone is an essential service. Thus they view with alarm the prospects of significantly higher local phone rates.

Two Canadian analysts have concluded that rate rebalancing due to competition would result in a large number of Canadian families (150,000 subscribers, representing 400,000 people) giving up phone service.<sup>(41)</sup> These conclusions have been drawn from a now out-of-date

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(40) It is estimated that 60% of households would pay the same or less under a revenue-neutral LMS regime. Big losers would be businesses engaged in telephone solicitation and families with teenage children. See: S. Globerman and W.T. Stanbury, "Local Measured Service Pricing or Rate Rebalancing? Efficiency and Distributional Considerations," in: R.J Schultz and P. Barnes, eds., (1984), p. 44.

(41) R. Pike and V. Mosco, "Canadian Consumers and Telephone Pricing -- From Luxury to Necessity and Back Again?" *Telecommunications Policy*, March 1986, p. 17-32. The statistic on 150,000 subscribers comes from Bell Canada data.

American study of telephone demand.(42) Taking into account the fact that Bell Canada seems to have overestimated the extent of local price rise needed in the face of long-distance competition, and the fact that LMS and other factors could significantly limit the price increase faced by poorer households, it seems that far fewer households would give up telephone service than is indicated by Pike and Mosco. Economic factors other than price also affect the degree of telephone penetration. In the United States, the penetration rate rose from 91.4% in 1983 to 93.3% in 1990 even though the real price of local services increased by 10% over that period.(43)

But even if it can be demonstrated that competition would not cause large numbers of households to give up telephone service, it is not clear that the issue will die. The issue may be not so much one of universality as one of income redistribution. Low basic phone rates are viewed as an entitlement by many who would resent having to pay a larger share of income to pay for that service.

If this attitude prevails, it is then a matter of devising an income redistribution scheme which is consistent with a competitive environment. This would require fairly accurate targeting. Some American states have instituted "lifeline rates" to enable poorer families to receive a discount on local phone services. With such an approach, however, the phone company becomes the provider for some welfare services, though it is not at all clear that it is the best provider of such services, or the best authority for deciding who should receive such transfers.

But such a situation, while it might not be completely desirable, would not be new. The CRTC and the telephone companies are today taking on such a welfare role as they determine the direction and

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(42) The Pike and Mosco article includes a table showing estimated price elasticities of demand, from a study by L.J. Perl, based on American 1970 census data. A newer study by the same author, using 1980 data, estimates elasticities which are almost 50% lower.

(43) Consumers' Association of Canada, *Residential Telephony*, prepared by T.M. Denton Consultants Inc., Ottawa, Ontario, March 1991, p. 23.

extent of income transfers. The problems that might plague a telecommunications system in the future are similar to the ones the system faces today.

Another approach is to provide a basic, low-priced package of services at a price below cost and hope that poor families take up this offer. Such a package might include a monthly access charge and a very low number of free calls. It would have the advantage of being free of the stigma that might be attached to other programs. This approach has been tried in California; ironically, most of the demand for lifeline services has come from affluent customers who used the programs to obtain cheap phone service for their ski chalets and vacation homes. (44)

The Consumers' Association of Canada (CAC) has come out in support of long-distance competition as long as it does not result in higher local telephone rates, a position which that organization obviously feels is not inconsistent. Indeed, this argument is very similar to the one made public by Unitel in its quest for access to the long-distance market. The CAC vision of competition is one in which a limited amount of competition in long-distance markets would enable those rates to decline, while the elastic nature of demand for long-distance services would provide revenues to continue local subsidies. Such a view is not unrealistic and it is possible that the CRTC would structure phone rates and access charges to maintain the local subsidy. If this is the case, then the full benefits of long-distance competition cannot be realized, since some monopoly profits would be required to fund the subsidy.

As long as this is the case, the threat of local bypass will continue. With further technological advances, that threat will grow.

Pressure to restructure local rates could also come from such technological and economic developments at the local level. Thus, even if the CRTC can juggle long-distance competition with stable local prices, the problem will not go away because of local mispricing. And this means that local prices will likely rise some time in the future, whatever the outcome of the current CRTC hearings.

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(44) H.N. Janisch, in: W.T. Stanbury (1986), p. 350.

But two things should be kept in mind when discussing future price trends. In the first place, technological advances have been a driving force in reducing the real price of telephone services over time. This tendency has not slowed down; in fact, it has accelerated. Thus, future price increases will take place in an environment in which real prices will likely be lower than they are today. Secondly, competition will further work to lower prices. As local alternatives expand, phone companies must seek more efficient ways of delivering their product or lose market share. The need to raise local prices may be solved by reducing local costs of production instead.

This current episode is only a further step to making the telecommunications industry in Canada fully competitive. Like the situation in the United States, many further changes will be required before all of the benefits of competition are realized. Whatever the final outcome though, the makers of government policy and their designated regulators will have to find new ways in which to achieve existing social policy goals within a new, competitive environment. It might be, as the CAC suggests, easy to meet such social goals or it might prove to be impossible, or excessively costly. If the latter case proves to be correct, those goals would have to be re-evaluated.

#### CONCLUDING COMMENTS

Telecommunications deregulation in the United States has led to some significant changes in the American telephone industry. Despite the fact that the regulatory system in Canada is quite different from that in the U.S., some of the same changes are occurring here, particularly with respect to prices. While some competitive spillover has resulted, long-distance rates in Canada are noticeably higher than in the United States.

Although any sector of the economy that goes from monopoly to competition is bound to have transitional problems, significant decline in quality does not appear to have arisen in the U.S. This should not be surprising, since competition is based as much on quality as it is on

price. The investment record of the competing firms bears this out. In fact the widespread introduction of fibre optics was due more to the new entrants than to AT&T, which had an existing long-distance network based on the old technology.

Finally, deregulation in the United States has led to substantial entry into the market, but has resulted in only three independent long-distance networks. Given the state of technology, this might be all that the American economy can support at present. If that is true, then the extent of entry into the Canadian market in the face of a newly competitive environment is limited.

The evidence in the United States and Canada indicates clearly that, largely because of changes in technology, natural monopoly is no longer a very apt description of the telecommunications sector. This has serious ramifications for the way governments and bureaucratic agencies treat that sector. But the implications go beyond this sector. It may well now be that natural monopoly is no longer an accurate description of the cable TV industry. If this is so, the CRTC will once again have to come to grips with the impact of emerging competition in a heavily regulated industry.

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